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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/521,166
Filing Date: January 14, 2005
Appellant(s): MORIKAWA, HIROSHI

Maulin M. Patel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/13/2009 appealing from the Office action mailed 10/1/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,232,978	Ishida	5-2001
4,736,399	Okazaki	4-1988

20030123094	Karidi	7-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 17, 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (6,232,978) in view of Okazaki et al (4,736,399).

Regarding claim 3: Ishida teaches an output apparatus **(col. 1 lines 9-13 & col. 13 lines 55-60)** for transforming and outputting bitmap data **(col. 1 lines 41-54)** comprising: a bitmap data storage unit for storing bitmap data before transformation **(col. 14 lines 41-43)**; a vectorization unit for producing first vector data by vectorizing at least one part of the bitmap data **(coarse contour vector, 2 of Figure 9 & S222 of Figure 22, col. 1 lines 44-47 & col. 14 lines 44-45)**; a data production unit for producing bitmap data after transformation **(processing, col. 1 lines 49-51 & col. 8 lines 56-59)** based on a predetermined calculation **(smoothing and zoom processing, col. 2 lines 64),** the bitmap data before transformation **(col. 5 lines 30-33)** and first vector data **(contour vectors, col. 1 lines 44-46 & col. 8 lines 54-56)**; and an output unit for outputting the bitmap data after transformation produced by the data production

unit **(col. 5 lines 34-44)**; and producing second coordinate information that specifies a target dot to be processed **(col. 2 lines 8-14 & lines 59-64).**

Ishida does not explicitly teach producing bitmap data after transformation based on an *inverse function*. Ishida does not explicitly teach producing second coordinate information based on information that specifies a target dot to be processed using the inverse function of the certain calculation; a color determination unit for determining a color of a position specified by the second coordinate information, based on the first vector data produced by the vectorization unit and a color of a dot on the bitmap data, and then setting up the color determined thereby for the target dot specified by the first coordinate information; and a control unit for controlling so that the second coordinate information production by the inverse transformation unit and the dot color determination by the color determination unit can be performed on all dots on bitmap data to be outputted.

However, Okazaki teaches a system **(col. 7 lines 20-45)** producing bitmap data **(corrected image produced by the digital fluorographic apparatus, col. 1 lines 10-11 & col. 3 lines 20-23)** after transformation based on an inverse function **(Figure 5, col. 3 lines 50-54)**, the bitmap data **(distorted image, col. 3 lines 32-33)** and first vector data **(X, col. 3 lines 21-24)**, producing second coordinate **(distorted image, col. 3 lines 23-24)** information based on information that specifies a target dot to be processed **(pixel (picture element), col. 3 lines 22)**, using the inverse function of the certain calculation **(Figure 5, col. 3 lines 50-54)**; a color determination unit **(intensity, col. 1 lines 14-16 & grey level, col. 7 line 34)** for determining a color **(intensity)**, if the

first vector data is in a passing relationship with a dot represented by the second coordinate information **(col. 2 lines 5-13 & col. 4 lines 22-27)**, the color of the position **(intensity of the pixel)** specified by the second coordinate information **(Figure 7)** being determined based on the position specified by the second coordinate information **(X, col. 3 lines 21-24)**, the first vector data **(X')** produced by the vectorization unit and a color **(intensity & grey level)** of a dot **(pixel, col. 4 lines 10-11)** on the bitmap data **(digital image)**, and then setting up the color **(intensity, col. 4 line 8)** determined thereby for the target dot specified by the first coordinate information **(pixel (picture element), col. 3 lines 22)**; and a control unit for controlling so that the second coordinate information production by the inverse transformation unit **(Figure 5, col. 3 lines 50-54)** and the dot color determination by the color determination unit **(intensity & grey level)** can be performed on all dots on bitmap data to be outputted **(corrected image, col. 3 lines 20-23)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it.*" Okazaki col. 1 lines 51-56).

Therefore, it would have been obvious to combine Ishida and Okazaki to obtain the invention as specified in claim 3.

Regarding claim 17: Ishida teaches method for transforming and outputting bitmap data **(col. 1 lines 9-13 & col. 13 lines 55-60)** comprising: producing first vector data by vectorizing at least one part of the bitmap data before transformation that is stored **(coarse contour vector, 2 of Figure 9 & S222 of Figure 22, col. 1 lines 44-47 & col. 14 lines 44-45)**; producing bitmap data after transformation **(processing, col. 1 lines 49-51 & col. 8 lines 56-59)** based on a predetermined calculation **(smoothing and zoom processing, col. 2 lines 64),** the bitmap data before transformation **(col. 5 lines 30-33)** and first vector data **(contour vectors, col. 1 lines 44-46 & col. 8 lines 54-56)**; outputting the bitmap data after transformation **(col. 5 lines 34-44)**, the step of producing bitmap data after transformation comprising: producing second coordinate information that specifies a target dot to be processed **(col. 2 lines 8-14 & lines 59-64).**

Ishida does not explicitly teach producing bitmap data after transformation based on an *inverse function,* producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed using the inverse function of the predetermined calculation; if the first vector data is in a passing relationship with a dot represented by the second coordinate information, determining a color of a position specified by the second coordinate information based on the position specified by the second coordinate information, the first vector data and

a color of a dot on the bitmap data, and then setting up the color determined thereby for the target dot specified by the first coordinate information.

However, Okazaki teaches a system **(col. 7 lines 20-45)** producing bitmap data **(corrected image produced by the digital fluorographic apparatus, col. 1 lines 10-11 & col. 3 lines 20-23)** after transformation based on an inverse function **(Figure 5, col. 3 lines 50-54)**, producing second coordinate information **(distorted image, col. 3 lines 23-24)** by inversely transforming first coordinate information that specifies a target dot to be processed **(pixel (picture element), col. 3 lines 22)** using the inverse function of the predetermined calculation **(Figure 5, col. 3 lines 50-54)**; if the first vector data **(X', col. 3 lines 21-24)** is in a passing relationship with a dot represented by the second coordinate information **(col. 2 lines 5-13 & col. 4 lines 22-27)**, determining a color of a position **(intensity of the pixel)** specified by the second coordinate information **(Figure 7)** based on the position specified by the second coordinate information **(X, col. 3 lines 21-24)**, the first vector data and a color of a dot on the bitmap data **(distorted image, col. 3 lines 32-33)**, and then setting up the color **(intensity, col. 4 line 8)** determined thereby for the target dot specified by the first coordinate information **(pixel (picture element), col. 3 lines 22)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the

rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it.*" Okazaki col. 1 lines 51-56).

Therefore, it would have been obvious to combine Ishida and Okazaki to obtain the invention as specified in claim 17.

Regarding claim 22: Ishida teaches a computer program stored in a computer readable medium for transforming and outputting bitmap data **(col. 1 lines 9-13 & col. 13 lines 55-60)**; producing bitmap data after transformation **(processing, col. 1 lines 49-51 & col. 8 lines 56-59)** based on a predetermined calculation **(smoothing and zoom processing, col. 2 lines 64),** the bitmap data before transformation **(col. 5 lines 30-33)** and first vector data **(contour vectors, col. 1 lines 44-46 & col. 8 lines 54-56)**; outputting the bitmap data after transformation **(col. 5 lines 34-44)**, the step of producing bitmap data after transformation comprising: producing second coordinate information that specifies a target dot to be processed **(col. 2 lines 8-14 & lines 59-64).**

Ishida does not explicitly teach producing bitmap data after transformation based on an *inverse function,* producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed using the inverse function of the predetermined calculation; determining a color of a position specified by the second coordinate information based on the first vector data and a color of a dot on the bitmap data, and then setting up the color determined

thereby for the target dot specified by the first coordinate information; and controlling so that the step of producing the second coordinate information and the step of setting up the color determined thereby for the target dot can be performed on all dots on bitmap data to be outputted.

However, Okazaki teaches a system **(col. 7 lines 20-45)** producing bitmap data **(corrected image produced by the digital fluorographic apparatus, col. 1 lines 10-11 & col. 3 lines 20-23)** after transformation based on an inverse function **(Figure 5, col. 3 lines 50-54)**, producing second coordinate information **(distorted image, col. 3 lines 23-24)** by inversely transforming first coordinate information that specifies a target dot to be processed **(pixel (picture element), col. 3 lines 22)** using the inverse function of the predetermined calculation **(Figure 5, col. 3 lines 50-54)**; determining a color of a position **(intensity of the pixel)** specified by the second coordinate information **(Figure 7)** based on the position specified by the second coordinate information **(X, col. 3 lines 21-24)**, the first vector data and a color of a dot on the bitmap data **(distorted image, col. 3 lines 32-33)**, and then setting up the color **(intensity, col. 4 line 8)** determined thereby for the target dot can be performed on all dots on bitmap data to be outputted **(each pixel in the image, col. 2 lines 5-13)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the

rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it.*" Okazaki col. 1 lines 51-56).

Therefore, it would have been obvious to combine Ishida and Okazaki to obtain the invention as specified in claim 22.

Regarding claim 25: Ishida teaches method for transforming and outputting bitmap data **(col. 1 lines 9-13 & col. 13 lines 55-60)** wherein bitmap data after transformation **(processing, col. 1 lines 49-51 & col. 8 lines 56-59)** is directly based on an inverse function of a predetermined calculation **(smoothing and zoom processing, col. 2 lines 64)**, the bitmap data before transformation **(col. 5 lines 30-33)**, and the vector data **(contour vectors, col. 1 lines 44-46 & col. 8 lines 54-56)**.

Ishida does not explicitly teach producing bitmap data after transformation based on an *inverse function*.

However, Okazaki teaches a system **(col. 7 lines 20-45)** producing bitmap data **(corrected image produced by the digital fluorographic apparatus, col. 1 lines 10-11 & col. 3 lines 20-23)** after transformation based on an inverse function **(Figure 5, col. 3 lines 50-54)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it.*" Okazaki col. 1 lines 51-56).

Therefore, it would have been obvious to combine Ishida and Okazaki to obtain the invention as specified in claim 25.

Regarding claim 26: Ishida teaches an output apparatus for transforming and outputting bitmap data **(col. 1 lines 9-13 & col. 13 lines 55-60)** wherein a predetermined calculation is a calculation for executing a predetermined transformation on the bitmap data **(smoothing and zoom processing, col. 2 lines 64)** acquired by the bitmap data acquisition unit **(CPU 71 of Figure 15, col. 1 lines 41-44 & col. 3 lines 53-62)**.

Claims 7-9, 18, 23 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (6,232,978) in view of Karidi et al (2003/0123094).

Regarding claim 7: Ishida teaches an output apparatus **(col. 1 lines 9-13 & col. 13 lines 55-60)** comprising: a bitmap data storage unit for storing bitmap data before transformation **(col. 3 lines 30-33 & col. 14 lines 41-43)**; a bitmap data acquisition unit for acquiring bitmap data from the bitmap data storage unit **(CPU 71 of Figure 15, col.**

1 lines 41-44 & col. 3 lines 53-62); information indicating vector data that forms an image after transformation of the certain part **(col. 2 lines 15-19 & col. 3 lines 5-6)**; and an output unit for outputting data that is produced based on transformation results **(final output)** from the data transformation unit and processing results from the jaggy elimination processing unit **(col. 3 line 6)**.

Ishida does not explicitly teach a transformation rule retention unit for retaining at least one bitmap data transformation rule that is composed of a pair of information on certain part of the bitmap data; a data transformation unit for transforming part of the bitmap data according to the rule, checking, whether or not the information on certain part of bitmap, data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit: and, if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part.

However, Karidi teaches a transformation rule retention unit **(503 of Figure 5, jaggy look-up table)** for retaining at least one bitmap data transformation rule **(patterns related to one another, paragraph 54)** that is composed of a pair of information on certain part of the bitmap data **(502 of Figure 5)**; a data transformation unit for transforming part of the bitmap data according to the rule **(paragraphs 53-54)**, checking, whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit **(Figure 5, paragraph 54)**; and, if matched replacing

the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part **(504 of Figure 5)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus as taught by Ishida with the smoothing method and apparatus as taught by Karidi.

The motivation to do so is to produce text images with improved smoothness for all edges ("...*a method and apparatus for producing text images with improved smoothness in horizontal, vertical, and slanted edges, and for hole mending and dot removal*." Karidi paragraph 2).

Therefore, it would have been obvious to have combined Ishida and Karidi to obtain the invention in claim 7.

Regarding claims 8 and 9: Ishida further discloses the certain part **(101) (pixel of focus)** is in a rectangular shape **(102)** having a size of n X m **(102) (3x3)**, where n **(is 3)** and m **(is 3)** represent a positive integer **(the pixel and the eight pixels neighboring it enter the outline extraction unit, col. 1 lines 65-67 - col. 2 lines 1-4)**.

Regarding claim 18: Ishida teaches a method for outputting bitmap data **(col. 1 lines 9-13 & col. 13 lines 55-60)** comprising the steps of: acquiring bitmap data stored **(CPU 71 of Figure 15, col. 1 lines 41-44 & col. 3 lines 53-62)**; information indicating vector data that forms an image after transformation of the certain part **(col. 2 lines 15-19 &**

col. 3 lines 5-6), and outputting data that is produced based on transformation results **(final output)** from the data transformation unit and processing results from the jaggy elimination processing unit **(col. 3 line 6)**.

Ishida does not explicitly teach a transformation rule having a pair of information on certain part of the bitmap data, the transforming comprising checking, whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit: and, if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part.

However, Karidi teaches a transformation rule retention unit **(503 of Figure 5, jaggy look-up table)** for retaining at least one bitmap data transformation rule **(patterns related to one another, paragraph 54)** that is composed of a pair of information on certain part of the bitmap data **(502 of Figure 5)**; checking, whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit **(Figure 5, paragraph 54)**; and, if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part **(504 of Figure 5)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus as taught by Ishida with the smoothing method and apparatus as taught by Karidi.

The motivation to do so is to produce text images with improved smoothness for all edges ("...*a method and apparatus for producing text images with improved smoothness in horizontal, vertical, and slanted edges, and for hole mending and dot removal*." Karidi paragraph 2).

Therefore, it would have been obvious to have combined Ishida and Karidi to obtain the invention in claim 18.

Regarding claim 23: Ishida teaches a computer program stored in a computer readable medium for executing **(col. 1 lines 9-13 & col. 13 lines 55-60)**: acquiring bitmap data stored **(CPU 71 of Figure 15, col. 1 lines 41-44 & col. 3 lines 53-62)**; information indicating vector data that forms an image after transformation of the certain part **(col. 2 lines 15-19 & col. 3 lines 5-6)**, and outputting data that is produced based on transformation results **(final output)** from the data transformation unit and processing results from the jaggy elimination processing unit **(col. 3 line 6)**.

Ishida does not explicitly teach a transformation rule having a pair of information on certain part of the bitmap data, the transforming comprising checking, whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit: and, if matched replacing the information on certain part of bitmap data obtained by

the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part.

However, Karidi teaches a transformation rule retention unit **(503 of Figure 5, jaggy look-up table)** for retaining at least one bitmap data transformation rule **(patterns related to one another, paragraph 54)** that is composed of a pair of information on certain part of the bitmap data **(502 of Figure 5)**; checking, whether or not the information on certain part of bitmap data obtained by the bitmap data acquisition unit matches the information on certain part of bitmap data retained by the rule retention unit **(Figure 5, paragraph 54)**; and, if matched replacing the information on certain part of bitmap data obtained by the bitmap data acquisition unit with a pair of information indicating vector data having an image resulting from the transformation of the certain part **(504 of Figure 5)**.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus as taught by Ishida with the smoothing method and apparatus as taught by Karidi.

The motivation to do so is to produce text images with improved smoothness for all edges ("...*a method and apparatus for producing text images with improved smoothness in horizontal, vertical, and slanted edges, and for hole mending and dot removal*." Karidi paragraph 2).

Therefore, it would have been obvious to have combined Ishida and Karidi to obtain the invention in claim 23.

Regarding claim 27: Ishida teaches an output apparatus for transforming and outputting bitmap data **(col. 1 lines 9-13 & col. 13 lines 55-60)** comprising a jaggy elimination processing unit for executing processing of eliminating jaggies appearing on the bitmap data **(as shown in Figure 1 the output unit 15 prints data produced based on the transformation [smoothing] results of the transformation [binary image reproducing] unit 14 and processing results from the jaggy elimination processing [outline extraction] unit 13, col. 3 lines 55-60 & col. 11 lines 29-63)**.

Regarding claim 28: Ishida teaches eliminating jaggies appearing on the bitmap **(col. 3 lines 49-62)**.

Regarding claim 29: Ishida teaches a computer program stored in a computer readable medium for executing **(col. 1 lines 9-13 & col. 13 lines 55-60)** for eliminating jaggies appearing on the bitmap **(col. 3 lines 49-62)**.

(10) Response to Argument

Regarding claims 3, 25 and 26:

Claims 25 and 26 are dependent from claim 3:

Regarding claim 3:

With regards to Appellant's argument on page 16, lines 16-17: this citation of Ishida **(col. 1 lines 9-13)** is only disclosing an output apparatus and as shown in the

above rejections of claims 3, 25 and 26 does not imply nor state that this one citation is meant to inclusively cover the entire stated claim.

With regards to Appellant's argument on page 16, lines 22-24: the Examiner respectfully disagrees that Ishida fails to teach storing bitmap data before transformation. Ishida teaches a bitmap data storage for storing bitmap data before transformation **(First, at step S221 in Figure 22, the binary image data is entered from a scanner. This input may be made via a communication I/F or use may be <u>made of data that has been stored</u> on a hard disk, col. 14 lines 40-43)**.

With regards to Appellant's argument on page 16, lines 25-27: the Examiner respectfully disagrees that Ishida fails to teach production of a first vector. Ishida teaches a vectorization unit for producing first vector data by vectorizing at least one part of said bitmap data **(An <u>outline extraction unit</u> 2 extracts a coarse contour vector (an outline vector prior to smoothing and zoom processing) from the binary image, col. 1 lines 44-47 <u>&</u> Next, at step S222, the outline vector data of the entered binary image is extracted, col. 14 lines 43-44)**.

With regards to Appellant's argument on page 17, lines 5-6: the above Ishida citations do demonstrate that original data can be from a stored source and that an "*outline extraction unit*" equates to the Appellant's "*vectorization unit*" clearly showing analogous inventive features.

With regards to Appellant's argument on page 17, line13 - page 18 line 4: Ishida teaches a data production unit (acquisition unit) for producing bitmap data after

transformation **(A binary image reproduction unit reproduces the binary image data in the raster-scan format from the outline vector data, col. 1 lines 51-53)**. Ishida also teaches an output unit for outputting said bitmap data after transformation by said data production unit **(A binary image output unit displays the binary image data in the raster-scan format, produces a hard copy of the data or outputs the data to a communication line or the like, col. 1 lines 51-54, col. 3 lines 1-6 & col. 9 lines 11-17)**.

With regards to Appellant's argument on page 17 line 13 - page 18 line 4: the above Ishida citations do demonstrate a "*image reproduction unit*" equates to the Appellant's "*data production unit*" as well as an "*output unit*" clearly showing analogous inventive features.

The Office Action dated 10/1/2008 does discuss "*an inverse function of a predetermined calculation.*" However, the Examiner does not assert that this feature is taught by Ishida but rather is remedied with the combination of Okazaki.

With regards to Appellant's arguments on page 18 line 5 – page 20 line 10: the Examiner respectfully reminds the Appellant that as indicated in the preceding rejection (from the Office Action dated 10/1/2008) of claims 3, 25 and 26, does state Ishida does not explicitly teach producing bitmap data after transformation based on an *inverse function,* producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed using the inverse function of the predetermined calculation; if the first vector data is in a passing

relationship with a dot represented by the second coordinate information, determining a color of a position specified by the second coordinate information based on the position specified by the second coordinate information, the first vector data and a color of a dot on the bitmap data, and then setting up the color determined thereby for the target dot specified by the first coordinate information.

With regards to Appellant's arguments on page 19 lines 14-17: the Examiner respectfully disagrees that Okazaki fails to teach a transformation unit, a color determination unit and a control unit. Although Okazaki does not explicitly break up the taught "*detecting system*" into these individual units (inverse transformation unit, color determination unit and control unit), it is clear from the disclosure that the "*detecting system*" as taught by Okazaki is accomplishing the same tasks.

Okazaki teaches a "***detecting system***" through which the image correction table is passed so that an image is obtained when the distorted image is corrected **(col. 3 lines 17-22)**. Okazaki teaches a first coordinate system vector X'=(x',y') of the distorted image and a second coordinate information corrected vector X=(x,y) **(col. 3 lines 21-24)**. The second coordinate information is the corrected vector and is produced as the resulting output of the detecting system that encompasses the forward and inverse transformation of the image data, the color (intensity) of the pixel point.

Okazaki teaches where a pixel of the first image has the function **f** applied as shown in Figures 5A and 5B with a reverse conversion $\mathbf{f}^{-1}$ transforming the image of Figure 5B to that of Figure 6A **(col. 3 lines 50-54)**. The Examiner notes that the

mathematical notation "**f^{-1}**", herein referred to by Okazaki as a "reverse conversion" is likewise equally known as an inverse function notation (and as notated on page 24, line 11 of the Specification).

Okazaki teaches where the color the color of the position **(col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

Thus, with regards to Appellant's arguments on page 20 lines 9-10, Okazaki does teach the particular essential features of the claimed invention.

With regards to Appellant's arguments on page 20 line 17 – page 22 line 18: Okazaki teaches as part of the "*detecting system*" of the imaging apparatus the pixel intensity is determined **(col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

The Appellant has asserted in Applicant Arguments/Remarks submitted to the USPTO on 11/17/2008 the following statement found on page 15, paragraph 2: "Applicant notes that an X-Ray imaging system does produce intensity values but displays those values in monochrome." The Appellant also states in the submitted Specification, page 9 lines 8-11: "*Note that the term "bitmap data" in the first embodiment means a graphic data composed of multiple colored points, hereinafter*

called a "dot." Each dot contains color information that specifies its own color. The color information may be black and white binary, or three-valued or more."

Monochrome is defined as "one or a single" color. Based upon the Appellant's own definition of what may be represented by the term "color," it is the Examiner's position that the "*detecting system*" as taught by Okazaki that includes determining the color (intensity that produces a monochromic output) of a pixel meets the limitations of the stated claims.

With regards to Appellant's arguments on page 22 line 25 – page 23 line 21: the Examiner respectfully disagrees, as previously discussed, that Okazaki fails to teach a control unit. Although Okazaki does not explicitly break up the taught "*detecting system*" into individual units, it is clear from the disclosure that the "*detecting system*" as taught by Okazaki is accomplishing the same task as the claimed "control unit."

Okazaki teaches a "***detecting system***" through which the image correction table is passed so that an image is obtained when the distorted image is corrected **(col. 3 lines 17-22)**. Okazaki teaches a first coordinate system vector X'=(x',y') of the distorted image and a second coordinate information corrected vector X=(x,y) **(col. 3 lines 21-24)**. The second coordinate information is the corrected vector and is produced as the resulting output of the detecting system that encompasses the forward and inverse transformation of the image data, the color (intensity) of the pixel point.

Okazaki teaches where a pixel of the first image has the function **f** applied as shown in Figures 5A and 5B with a reverse conversion $\mathbf{f}^{1}$ transforming the image of

Figure 5B to that of Figure 6A **(col. 3 lines 50-54*)*.** The Examiner notes that the mathematical notation "**f^{-1}**", herein referred to by Okazaki as a "reverse conversion" is likewise also equally known as an inverse function notation (and as notated on page 24, line 11 of the Specification).

Okazaki teaches where the color the color of the position **(col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

Regarding Appellant's argument on page 17 lines 7-15, page 18 lines 5-15, page 20 lines 11-21, page 22 line 19 - page 23 line 4 and page 23 line 22 - page 24 line 6: the Appellant argues the application of the referenced prior art. The Examiner did not apply the art singularly but instead applied the references in combination as shown in the Office Action dated 10/1/2008.

Ishida and Okazaki are combinable because they are from the same field of endeavor of image correction.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing*

a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it." Okazaki col. 1 lines 51-56).

Thus, with regards to Appellant's argument on page 23 lines 20-21, the Examiner maintains the position that Okazaki does teach the particular essential features of the claimed invention.

Therefore, with regards to Appellant's argument, the 35 U.S.C. § 103(a) rejection of claims 3, 25 and 26 are maintained.

Regarding claims 17 and 26:

Claim 26 is dependent from claim 17:

Regarding claim 17:

With regards to Appellant's argument on page 26, lines 19-20: the Examiner respectfully disagrees that Ishida fails to teach producing a first vector data. Ishida teaches a vectorization unit for producing first vector data by vectorizing at least one part of said bitmap data **(An outline extraction unit 2 extracts a coarse contour vector (an outline vector prior to smoothing and zoom processing) from the binary image, col. 1 lines 44-47 & Next, at step S222, the outline vector data of the entered binary image is extracted, col. 14 lines 43-44)**.

With regards to Appellant's argument on page 17, lines 5-6: the above Ishida citations do demonstrate that original data can be from a stored source and that an "*outline extraction unit*" equates to the Appellant's "*vectorization unit*" for producing a first vector data thus clearly showing analogous inventive features.

With regards to Appellant's argument on page 27, lines 10-11: the Examiner respectfully disagrees that Ishida does not teach producing bitmap data after transformation, producing second coordinate information after transformation as detailed in the above rejection. Ishida teaches a data production unit (acquisition unit) for producing bitmap data after transformation **(A binary <u>image reproduction unit</u> reproduces the binary image data in the raster-scan format <u>from the outline vector data</u>, col. 1 lines 51-53)**. Ishida also teaches an output unit for outputting said bitmap data after transformation by said data production unit **(A binary <u>image output unit</u> displays the binary image data in the raster-scan format, produces a hard copy of the data or outputs the data to a communication line or the like, col. 1 lines 51-54, col. 3 lines 1-6 & col. 9 lines 11-17)**.

With regards to Appellant's argument on page 27 lines 10-11: the above Ishida citations do demonstrate a "*producing bitmap data*" as well as "*producing second coordinate information*" thus clearly showing analogous inventive features.

With regards to Appellant's arguments on page 27 line 20 – page 28 line 16: the Examiner respectfully reminds the Appellant that as indicated in the preceding rejection (from the Office Action dated 10/1/2008) of claims 17 and 26, does state Ishida does not explicitly teach producing bitmap data after transformation based on an *inverse function,* producing second coordinate information by inversely transforming first coordinate information that specifies a target dot to be processed using the inverse function of the

predetermined calculation; if the first vector data is in a passing relationship with a dot represented by the second coordinate information, determining a color of a position specified by the second coordinate information based on the position specified by the second coordinate information, the first vector data and a color of a dot on the bitmap data, and then setting up the color determined thereby for the target dot specified by the first coordinate information.

With regards to Appellant's arguments on page 28 line 19 – page 29 line 14: the Examiner respectfully disagrees that Okazaki fails to teach a producing second coordinate information, determining a color of a position or a controlling function. Although Okazaki does not explicitly break up the taught "*detecting system*" using this explicit scheme, it is clear from the disclosure that the "*detecting system*" as taught by Okazaki is accomplishing the same tasks.

Okazaki teaches a "***detecting system***" through which the image correction table is passed so that an image is obtained when the distorted image is corrected **(col. 3 lines 17-22)**. Okazaki teaches a first coordinate system vector X'=(x',y') of the distorted image and a second coordinate information corrected vector X=(x,y) **(col. 3 lines 21-24)**. The second coordinate information is the corrected vector and is produced as the resulting output of the detecting system that encompasses the forward and inverse transformation of the image data, the color (intensity) of the pixel point.

Okazaki teaches where a pixel of the first image has the function **f** applied as shown in Figures 5A and 5B with a reverse conversion $\mathbf{f}^{1}$ transforming the image of

Figure 5B to that of Figure 6A **(col. 3 lines 50-54*)*.** The Examiner notes that the mathematical notation "**f^{-1}**", herein referred to by Okazaki as a "reverse conversion" is likewise equally known as an inverse function notation (and as notated on page 24, line 11 of the Specification). Thus, the Examiner maintains Okazaki teaches the transformation limitations as currently recited in claim 17.

Okazaki teaches where the color the color of the position **(col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

The Appellant has asserted in Applicant Arguments/Remarks submitted to the USPTO on 11/17/2008 the following statement found on page 15, paragraph 2: "Applicant notes that an X-Ray imaging system does produce intensity values but displays those values in monochrome." The Appellant also states in the submitted Specification, page 9 lines 8-11: "*Note that the term "bitmap data" in the first embodiment means a graphic data composed of multiple colored points, hereinafter called a "dot." Each dot contains color information that specifies its own color. The color information may be black and white binary, or three-valued or more.*"

Monochrome is defined as "one or a single" color. Based upon the Appellant's own definition of what may be represented by the term "color," it is the Examiner's position that the "*detecting system*" as taught by Okazaki that includes determining the color (intensity that produces a monochromic output) of a pixel meets the limitations of color determination as stated in claim 17.

With regards to Appellant's arguments on page 32 lines 20-28: the Examiner respectfully disagrees, as previously discussed, that Okazaki fails to teach a controlling function (control unit). Although Okazaki does not explicitly break up the taught "*detecting system*" into individual units, it is clear from the disclosure that the "*detecting system*" as taught by Okazaki is accomplishing the same task as the claimed "control unit." *The Examiner notes that this method feature has been performed or executed by the apparatus of claim 3 and therefore, has been analyzed and rejected therein.*

Okazaki teaches a "***detecting system***" through which the image correction table is passed so that an image is obtained when the distorted image is corrected **(col. 3 lines 17-22)**. Okazaki teaches a first coordinate system vector X'=(x',y') of the distorted image and a second coordinate information corrected vector X=(x,y) **(col. 3 lines 21-24)**. The second coordinate information is the corrected vector and is produced as the resulting output of the detecting system that encompasses the forward and inverse transformation of the image data, the color (intensity) of the pixel point.

Okazaki teaches where a pixel of the first image has the function **f** applied as shown in Figures 5A and 5B with a reverse conversion $\mathbf{f^{-1}}$ transforming the image of Figure 5B to that of Figure 6A **(col. 3 lines 50-54)**. The Examiner notes that the mathematical notation "$\mathbf{f^{-1}}$", herein referred to by Okazaki as a "reverse conversion" is likewise also equally known as an inverse function notation (and as notated on page 24, line 11 of the Specification).

Okazaki teaches where the color the color of the position **(each pixel, col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

Regarding Appellant's argument on page 27 lines 12-19, page 29 lines 15-25 and page 32 lines 4-19: the Appellant argues the application of the referenced prior art. The Examiner did not apply the art singularly but instead applied the references in combination as shown in the Office Action dated 10/1/2008.

Ishida and Okazaki are combinable because they are from the same field of endeavor of image correction.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it.*" Okazaki col. 1 lines 51-56).

Thus, with regards to Appellant's argument on page 32 lines 20-28, the Examiner maintains the position that Okazaki teaches the particular essential features of the claims 17 and 26.

Therefore, with regards to Appellant's argument, the 35 U.S.C. § 103(a) rejection of claims 17 and 26 are maintained.

Regarding claims 22 and 26:

Claim 26 is dependent on claim 22:

Regarding claim 22:

With regards to Appellant's argument on page 34 line 27 – page 35 line 20: the Examiner respectfully disagrees that Ishida does not teach "producing first vector data." Ishida teaches a vectorization unit for producing first vector data by vectorizing at least one part of said bitmap data **(An outline extraction unit 2 extracts a coarse contour vector (an outline vector prior to smoothing and zoom processing) from the binary image, col. 1 lines 44-47 & Next, at step S222, the outline vector data of the entered binary image is extracted, col. 14 lines 43-44)**.

With regards to Appellant's argument on page 35, lines 19-20: the above Ishida citations do demonstrate that original data can be from a stored source and that an "*outline extraction unit*" equates to the Appellant's "*vectorization unit*" clearly showing analogous inventive features.

With regards to Appellant's arguments on page 36 lines 16-17: the Examiner respectfully disagrees, as previously discussed, that Okazaki fails to teach a producing second coordinate information, determining a color of a position or a controlling function. Although Okazaki does not explicitly break up the taught "*detecting system*"

using this explicit scheme, it is clear from the disclosure that the "*detecting system*" as taught by Okazaki is accomplishing the same tasks.

With regards to Appellant's arguments on page 36 line 18 – page 38 line 20: Okazaki teaches a "***detecting system***" through which the image correction table is passed so that an image is obtained when the distorted image is corrected **(col. 3 lines 17-22)**. Okazaki teaches a first coordinate system vector X'=(x',y') of the distorted image and a second coordinate information corrected vector X=(x,y) **(col. 3 lines 21-24)**. The second coordinate information is the corrected vector and is produced as the resulting output of the detecting system that encompasses the forward and inverse transformation of the image data, the color (intensity) of the pixel point.

Okazaki teaches where a pixel of the first image has the function **f** applied as shown in Figures 5A and 5B with a reverse conversion $\mathbf{f^{1}}$ transforming the image of Figure 5B to that of Figure 6A **(col. 3 lines 50-54)**. The Examiner notes that the mathematical notation "$\mathbf{f^{-1}}$", herein referred to by Okazaki as a "reverse conversion" is likewise equally known as an inverse function notation (and as notated on page 24, line 11 of the Specification). Thus, the Examiner maintains Okazaki teaches the transformation limitations as currently recited in claim 22.

Okazaki teaches where the color the color of the position **(col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

The Appellant has asserted in Applicant Arguments/Remarks submitted to the USPTO on 11/17/2008 the following statement found on page 15, paragraph 2: "Applicant notes that an X-Ray imaging system does produce intensity values but displays those values in monochrome." The Appellant also states in the submitted Specification, page 9 lines 8-11: "*Note that the term "bitmap data" in the first embodiment means a graphic data composed of multiple colored points, hereinafter called a "dot." Each dot contains color information that specifies its own color. The color information may be black and white binary, or three-valued or more.*"

Monochrome is defined as "one or a single" color. Based upon the Appellant's own definition of what may be represented by the term "color," it is the Examiner's position that the "*detecting system*" as taught by Okazaki that includes determining the color (intensity that produces a monochromic output) of a pixel meets the limitations of color determination as stated in claim 22.

Therefore, with regards to Appellant's argument on page 38, lines 19-20, the Examiner maintains the particular unit function limitations of claim 22 are identified and taught by Okazaki.

With regards to Appellant's arguments on page 39 lines 1-18: the Examiner respectfully disagrees, as previously discussed, that Okazaki fails to teach a controlling function (control unit). Although Okazaki does not explicitly break up the taught "*detecting system*" into individual units, it is clear from the disclosure that the "*detecting system*" as taught by Okazaki is accomplishing the same task as the claimed "control

unit." *The Examiner notes that this computer program's feature has been performed or executed by the apparatus of claim 3 and therefore, has been analyzed and rejected therein.*

Okazaki teaches a "***detecting system***" through which the image correction table is passed so that an image is obtained when the distorted image is corrected **(col. 3 lines 17-22)**. Okazaki teaches a first coordinate system vector X'=(x',y') of the distorted image and a second coordinate information corrected vector X=(x,y) **(col. 3 lines 21-24)**. The second coordinate information is the corrected vector and is produced as the resulting output of the detecting system that encompasses the forward and inverse transformation of the image data, the color (intensity) of the pixel point.

Okazaki teaches where a pixel of the first image has the function **f** applied as shown in Figures 5A and 5B with a reverse conversion $\mathbf{f^{-1}}$ transforming the image of Figure 5B to that of Figure 6A **(col. 3 lines 50-54*)***. The Examiner notes that the mathematical notation "$\mathbf{f^{-1}}$", herein referred to by Okazaki as a "reverse conversion" is likewise also equally known as an inverse function notation (and as notated on page 24, line 11 of the Specification).

Okazaki teaches where the color the color of the position **(each pixel, col. 2 lines 5-13)**. Okazaki also teaches a shading correction unit **(102 of Figure 10)** as well as a display processing unit **(106 of Figure 10)** gray level modulates the image data stored in the image memory **(col. 7 lines 20-35)**.

Regarding Appellant's argument on page 35 line 21 - page 36 line 2 and page 38 line 21 - page 39 line 7: the Appellant argues the application of the referenced prior art.

The Examiner did not apply the art singularly but instead applied the references in combination as shown in the Office Action dated 10/1/2008.

Ishida and Okazaki are combinable because they are from the same field of endeavor of image correction.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the inverse color mapping function of Okazaki's invention with the image smoothing system as taught by Ishida.

The motivation to do so would be to provide a more dynamic system and robust system for generating greater accuracy and output quality by reducing distortion in the rendered image ("*...imaging apparatus which can provide an image configured so as to closely approximate the original object by correcting the spatial distortion, thus realizing a display wherein the image suffers so little distortion that an exact quantitative inspection can reliably be based on it.*" Okazaki col. 1 lines 51-56).

Thus, with regards to Appellant's argument on page 39 lines 1-18, the Examiner maintains the position that Okazaki does teach the particular essential features of the claims 22 and 26.

Therefore, with regards to Appellant's argument, the 35 U.S.C. § 103(a) rejection of claims 22 and 26 are maintained.

<u>Official Notice and Introduction of new evidence after Pre-Appeal Brief Review</u>

- With regards to Appellant's argument that a new reference was introduced: in the Appellant's arguments dated 11/17/2008, the Appellant stated in paragraph 2 that

"*Applicant notes that an X-Ray imaging system does produce intensity values but displays those values in monochrome. Colors cannot be produced from an X-Ray imaging Device.*" In response to the Appellant's statement, the Examiner's reply in the Advisory Action, dated 12/24/2008, only responded to this assertion that "*The Examiner considers the varying monochromatic (grayscale) values indicative of color – be it black, white or grayscale therein between. ... It is well known in the art to use intensity as a pseudo color as well as principles of monochromatic representation...*" Based upon the Final rejection of record, this statement was never suggested nor relied upon as basis for any rejection of the Appellant's claimed limitations but merely in response to the Appellant remarks.

Clearly the argument is moot when referring to the Appellant's own Specification, page 9, lines 8-17 "*Each dot contains color information that specifies its own color. The color information may be black and white binary, or three-valued or more. However, note that in the first embodiment, a graphic composed of multiple dots containing three-valued or many-valued data is considered a color graphic including a gray-scale image. There is no limitation for how the color information represents a color, and therefore, either RGB or* ***CMY format****, or even a combination of brightness, saturation, and tone is acceptable. Moreover, any kind of data configuration is feasible so as to create the color information. These features apply to any embodiments other than this.* "

Upon filing of the Pre-Appeal Conference Request, dated 2/6/2009, the Appellant's states on page 3, paragraph 1 "*In the Advisory Action, the Examiner admits the intensity values of Okazaki '399 are seen in monochrome, but considers the varying*

monochromatic values indicative of color. This is inaccurate; color is not the same in any way to monochrome. The examiners goes on to allege that it is well known in the art to use intensity values as pseudo color as well as principles of monochromatic representation which can be applied to other color systems such as those using CMY. The Applicant is unclear at what "CMY" refers. In addition, there is no suggestion of to use intensity values as pseudo color as well as principles of monochromatic representation which can be applied to other color systems in Okazaki '399. Applicant requests a piece of art to show the well known nature of this principle."

The following document was provided at the Appellant's request:

Monochrome image representation and segmentation based on the pseudo-color and PCT transformations
Tang, H. Wu, E.X. Gallagher, D. Heymsfield, S.B.
Dept. of Radiol., Columbia Univ., New York, NY ;
This paper appears in: Engineering in Medicine and Biology Society, 2001. Proceedings of the 23rd Annual International Conference of the IEEE
Publication Date: 2001
Volume: 3, On page(s): 2696- 2699 vol.3
ISSN: 1094-687X
ISBN: 0-7803-7211-5
INSPEC Accession Number: 7501844
Current Version Published: 2002-11-07

However, the Examiner respectfully points out that at no time was this document relied upon during prosecution with regards to any rejected claim limitation.

Regarding claims 7-9 and 27:

Claims 8, 9 and 27 are dependent on claim 7

Regarding claim 7:

With regards to Appellant's arguments on page 42 line 11 – page 43 line 15: the Examiner respectfully disagrees that Ishida does not teach a bitmap storage unit, a bitmap data acquisition unit and an output unit.

To the contrary, Ishida teaches having a hard disk for storing original data **(col. 14 lines 41-43)**, a bitmap acquisition unit **(CPU 71 of Figure 15, col. 3 lines 18-23)**, and an output unit **(col.3 line 6)**. Based on the disclosure as taught by Ishida and as more explicitly cited in the art rejection included herein, it is clear that Ishida teaches the particular units that are considered essential to the invention.

With regards to Appellant's arguments on page 44 line 17 – page 47 line 14: the Examiner respectfully disagrees that Karidi does not teach a transformation rule retention unit and a data transformation unit.

To the contrary, Karidi teaches <u>a transformation rule retention unit</u> **(look-up conversion table as shown in Table D, 503 of Figure 5, paragraph 59)** that retains at least one bitmap data transformation rule **(pattern that is used for smoothing is identified as shown in 502 of Figure 5)** and the level of smoothing is assigned based on the rule and the particular pixel pair information **(paragraphs 53-54 & 59)**. This level is then used by the <u>data transformation unit</u> **(504 of Figure 5 as part of the Text Enhancement System, further disclosed in paragraph 40)** when a selected grid pattern of the image matches a rule pattern **(paragraph 54)** and which when matched **(based on transformation rules shown in Table D)** modify the ink value of the current pixel **(paragraph 59)**. When examining Figure 5 and details of paragraphs 53-59, it is

obvious that the smoothing level assigned and the rule to be used are paired for the necessary transformation.

Regarding Appellant's argument on page 43 lines 16-27 and page 47 line 15 – page 48 line 4: the Appellant argues the application of the referenced prior art. The Examiner did not apply the art singularly but instead applied the references in combination as shown in the Office Action dated 10/1/2008.

Ishida and Karidi are combinable because they are from the same field of endeavor of image correction.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the image smoothing system as taught by Ishida with the smoothing method and apparatus as taught by Karidi.

The motivation to do so is to produce text images with improved smoothness for all edges ("*...a method and apparatus for producing text images with improved smoothness in horizontal, vertical, and slanted edges, and for hole mending and dot removal.*" Karidi paragraph 2).

Therefore, with regards to Appellant's argument of page 47 lines 13-14 and page 48 lines 5-6: the Examiner maintains Karidi teaches a transformation rule retention unit and a data transformation unit of claims 7-9 and 27.

Therefore, with regards to Appellant's argument, the 35 U.S.C. § 103(a) rejection of claims 7-9 and 27 are maintained.

Claims 18 and 28:

Claim 28 is dependent from claim 18

Claim 18:

With regards to Appellant's arguments on page 49 line 4 – page 50 line 2: the Examiner respectfully disagrees that Ishida does not teach a bitmap storage unit, a bitmap data acquisition unit and an output unit.

To the contrary, Ishida teaches having a hard disk for storing original data **(col. 14 lines 41-43)**, a bitmap acquisition unit **(CPU 71 of Figure 15, col. 3 lines 18-23)**, and an output unit **(col.3 line 6)**. Based on the disclosure as taught by Ishida and as more explicitly cited in the art rejection included herein, it is clear that Ishida teaches the particular units that are considered essential to the invention.

With regards to Appellant's arguments on page 50 line 12 – page 51 line 24: the Examiner respectfully disagrees that Karidi does not teach a transforming part of a bitmap according to a transformation rule retention.

To the contrary, Karidi teaches <u>a transformation rule retention unit</u> **(look-up conversion table as shown in Table D, 503 of Figure 5, paragraph 59)** that retains at least one bitmap data transformation rule **(pattern that is used for smoothing is identified as shown in 502 of Figure 5)** and the level of smoothing is assigned based on the rule and the particular pixel pair information **(paragraphs 53-54 & 59)**. This level is then used by the <u>data transformation unit</u> **(504 of Figure 5 as part of the Text Enhancement System, further disclosed in paragraph 40)** when a selected grid pattern of the image matches a rule pattern **(paragraph 54)** and which when matched **(based on transformation rules shown in Table D)** modify the ink value of the current

pixel **(paragraph 59)**. When examining Figure 5 and details of paragraphs 53-59, it is obvious that the smoothing level assigned and the rule to be used are paired for the necessary transformation.

Regarding Appellant's argument on page 50 lines 3-11 and page 52 lines 1–16: the Appellant argues the application of the referenced prior art. The Examiner did not apply the art singularly but instead applied the references in combination as shown in the Office Action dated 10/1/2008.

Ishida and Karidi are combinable because they are from the same field of endeavor of image correction.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the image smoothing system as taught by Ishida with the smoothing method and apparatus as taught by Karidi.

The motivation to do so is to produce text images with improved smoothness for all edges ("...*a method and apparatus for producing text images with improved smoothness in horizontal, vertical, and slanted edges, and for hole mending and dot removal.*" Karidi paragraph 2).

Therefore, with regards to Appellant's argument of page 52 lines 17-18: the Examiner maintains Karidi teaches a transforming part of a bitmap according to a transformation rule of claims 18 and 28.

Therefore, with regards to Appellant's argument, the 35 U.S.C. § 103(a) rejection of claims 18 and 28 are maintained.

<u>Regarding claims 23 and 29:</u>

Claim 29 is dependent on claim 23

<u>Regarding claim 23:</u>

With regards to Appellant's arguments on page 53 line 13 – page 54 line 10: the Examiner respectfully disagrees that Ishida does not teach a bitmap storage unit, a bitmap data acquisition unit and an output unit.

To the contrary, Ishida teaches having a hard disk for storing original data **(col. 14 lines 41-43)**, a bitmap acquisition unit **(CPU 71 of Figure 15, col. 3 lines 18-23)**, and an output unit **(col.3 line 6)**. Based on the disclosure as taught by Ishida and as more explicitly cited in the art rejection included herein, it is clear that Ishida teaches the particular units that are considered essential to the invention.

With regards to Appellant's arguments on page 55 line 6 – page 56 line 5: the Examiner respectfully disagrees that Karidi does not teach a transforming part of a bitmap according to a transformation rule retention.

To the contrary, Karidi teaches <u>a transformation rule retention unit</u> **(look-up conversion table as shown in Table D, 503 of Figure 5, paragraph 59)** that retains at least one bitmap data transformation rule **(pattern that is used for smoothing is identified as shown in 502 of Figure 5)** and the level of smoothing is assigned based on the rule and the particular pixel pair information **(paragraphs 53-54 & 59)**. This level is then used by the <u>data transformation unit</u> **(504 of Figure 5 as part of the Text Enhancement System, further disclosed in paragraph 40)** when a selected grid pattern of the image matches a rule pattern **(paragraph 54)** and which when matched

(based on transformation rules shown in Table D) modify the ink value of the current pixel **(paragraph 59)**. When examining Figure 5 and details of paragraphs 53-59, it is obvious that the smoothing level assigned and the rule to be used are paired for the necessary transformation.

Regarding Appellant's argument on page 54 lines 12-19 and page 56 lines 6–21: the Appellant argues the application of the referenced prior art. The Examiner did not apply the art singularly but instead applied the references in combination as shown in the Office Action dated 10/1/2008.

Ishida and Karidi are combinable because they are from the same field of endeavor of image correction.

In view of this, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the image smoothing system as taught by Ishida with the smoothing method and apparatus as taught by Karidi.

The motivation to do so is to produce text images with improved smoothness for all edges ("...*a method and apparatus for producing text images with improved smoothness in horizontal, vertical, and slanted edges, and for hole mending and dot removal.*" Karidi paragraph 2).

Although the Appellant has disagreed with the standing rejections of claims 23 and 29, the Appellant did not request consideration for the rejection of these claims be withdrawn.

However, the Examiner assumes the Appellant's argument of page 56 lines 4-5 was intended to encompass claims 23 and 29.

Therefore, the Examiner maintains Karidi teaches a transforming part of a bitmap according to a transformation rule of claims 23 and 29.

Therefore, with regards to Appellant's argument, the 35 U.S.C. § 103(a) rejection of claims 23 and 29 are maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Barbara D Reinier/

Examiner, Art Unit 2625

Conferees:

/Twyler L. Haskins/

Supervisory Patent Examiner, Art Unit 2625

/Edward L. Coles/

Supervisory Patent Examiner, Art Unit 2625